

# Life cycle inventory methodology and databases

## Subject editor proposal

**Rolf Frischknecht**

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### 1 Rolf Frischknecht, the new Subject Editor

#### Position:

Managing partner of ESU-services Ltd., a consulting company in the fields of LCA and environmental footprint accounting. Lecturer on LCA at the Swiss Federal Institute of Technology Zürich (ETHZ), bachelor and master courses

The position as manager of the ecoinvent Centre, which Rolf Frischknecht held for 10 years, has gone over to Bo Weidema and Roland Hirsch in April 2008.

#### Education:

- PhD on decision-supporting Life Cycle Inventory Methodology, ETH Zürich (1998)
- Postgraduate studies on energy and environment, Fachhochschule Basel, Muttensz (1990)
- Dipl. Bau-Ing. ETH with emphasis on structural and hydraulic engineering, ETH Zürich (1986)

#### Fields of activities:

##### *Experiences:*

- Environmental management consultancies based on life cycle assessment (LCA);
- Research in the field of LCA;
- Training courses in LCA and in the ecoinvent data and database;
- Peer review of LCA studies and papers;

- Peer reviews of papers submitted to the International Journal of LCA, the Journal for Cleaner Production, the Journal of Industrial Ecology and the Environmental Impact Assessment Review

#### Professional affiliations:

- Society for Environmental Toxicology and Chemistry (SETAC)
- Swiss Association of Environmentally Sound Management (öbu)
- Swiss Society of Engineers and Architects (SIA)
- Association of German Engineers (VDI)

#### Areas of interest:

- Material flow analysis
- Energy
- Informatics
- Life cycle assessment
- Data formats and database designs



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It is with pleasure that I have accepted the responsibility of working as a Subject Editor for a new subject area “Life

cycle inventory methodology and databases” in *Int J Life Cycle Assessment*.

My first activity as Subject Editor concerns the proposal for the new subject area in the form of an outline. This outline is to serve as a starting point for creating the section “Life cycle inventory methodology and databases”.

A proposal requires critical comments, suggestions and recommendations, which, as I hope, will be contributed by our “Chief”, our Co-Editors, the Editorial Board and our Readers.

## 2 Definition of the proposed area “Life cycle inventory methodology and databases”

Life cycle thinking gets more and more attention in business and administration. Directives and laws are put into force which ask for life cycle assessment considerations on products or processes (such as European Commission 2003; TrÖbiV 2008).

As a consequence, more and more countries are on the way to establish national or regional LCI databases, and business associations publish their LCI datasets either separately or within public databases. Others are developing open source LCI databases.

Besides the discussions about safeguard subjects and impact category indicators, methodological discussions about life cycle inventory analysis are getting increasing attention (again). This area covers issues such as:

- Choice of an appropriate functional unit
- Choice of the appropriate system model (attributional versus decisional and consequential approaches)
- Scope dependency of the LCI model
- Allocation in joint production and allocation in recycling
- Market mix modelling
- Cutoff rules
- Biogenic carbon modelling and accounting (e.g. carbon fixation and carbon storage)
- Temporal differentiation (e.g. long-term emissions from landfill and tailings sites)
- Geographical differentiation (regionalisation)
- Modelling of carbon offset measures
- Modelling of certified products (e.g. certified green electricity)
- Guidance documents of national, regional or association LCI databases

Thus, the papers that will be submitted to the proposed subject area “LCI methodology and databases” focus on methodological aspects of inventory analysis (both general and related to LCI databases), ideally complemented with a showcase. Contributions with a focus on case studies are

better submitted to the respective “topic editors” (such as agriculture, packaging, energy and food products, etc.).

## 3 Rolf Frischknecht’s publications in *Int J Life Cycle Assessment*

- 12 LCA Special (1) 7–17 (2007) The environmental relevance of capital goods in life cycle assessments of products and services
- 12 LCA (3) 181–190 (2007) Applying cumulative exergy demand (CExD) indicators to the ecoinvent database
- 11 LCA\_Special (1) 40–48 (2006) Notions on the design and use of an ideal regional or global LCA database
- 10 LCA (3) 166–167 (2005) The ecoinvent database—reply to the Letter to the Editor of Schmidt & Jensen [*Int J LCA* 10(2)97]
- 11 LCA (4) 265–276 (2006) Life cycle assessment of the mobile communication system UMTS: towards eco-efficient systems
- 10 LCA (1) 1–2 (2005) ecoinvent Data v1.1 (2004): from heterogenous databases to unified and transparent LCI data
- 10 LCA (1) 24–34 (2005) Life cycle assessment for emerging technologies—case studies for photovoltaic and wind power
- 10 LCA (1) 3–9 (2005) The ecoinvent database—overview and methodological framework
- 10 LCA (4) 248–254 (2005) Representing statistical distributions for uncertain parameters in LCA. Relationships between mathematical forms, their representation in EcoSpold, and their representation in CMLCA
- 9 LCA (5) 339–341 (2004) 22nd Discussion Forum on LCA—evaluation of long-term impacts in LCA
- 9 LCA (4) 211–213 (2004) Transparency in LCA—a heretical request?
- 7 LCA (3) 184 (2002) Environmental labelling of green electricity with LCA key parameter models
- 7 LCA (5) 14A (2002) ecoinvent centre: the Swiss Centre for Life Cycle Inventories goes online with a test database
- 6 LCA (4) 192–198 (2001) Guidelines for consistent reporting of exchanges from/to nature within life cycle inventories (LCI)
- 4 LCA (1) 57–59 (1999) New results in LCA research at the Swiss Federal Institute of Technology (ETH) Zurich
- 5 LCA (2) 85–95 (2000) Allocation in life cycle inventory analysis for joint production
- 4 LCA (3) 175–179 (1999) Presentation and introduction
- 3 LCA (5) 266–272 (1998) Einstein’s lessons for energy accounting in LCA
- 3 LCA (6) 321–332 (1998) A special view on the nature of the allocation problem

## References

- European Commission (2003) Directive of the European Parliament and of the Council on establishing a framework for the setting of eco-design requirements for energy-using products and amending Council Directive 92/42/EEC (COM(2003) 453 final). European Commission; Commission of the European Communities, Brussels. [http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003\\_0453en01.pdf](http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003_0453en01.pdf)
- TrÖbiV (2008) Verordnung des UVEK über den Nachweis der positiven ökologischen Gesamtbilanz von Treibstoff aus erneuerbaren Rohstoffen. In: Eidg. Department für Umwelt, Verkehr, Energie und Kommunikation (UVEK), Switzerland